

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a conductive pipe including an inner surface forming an inner space shaping a
5 path of a refrigerant liquid and an outer surface including a plane partially formed thereof;

a power semiconductor element fixed onto said plane in said outer surface of
said conductive pipe through a bonding layer;

an external connecting terminal including an inner lead part including a tip
portion bonded onto said plane in said outer surface of said conductive pipe and an outer
10 lead part continuous with said inner lead part; and

a mold resin covering the whole surface of said power semiconductor element,
the whole of said inner lead part of said external connecting terminal, and said outer
surface of said conductive pie.

15 2. The semiconductor device according to claim 1, wherein

said conductive pipe further includes an insulating film formed on the whole of
said inner surface, and

said mold resin covers the whole of said conductive pipe, and includes a
refrigerant liquid inlet continuous with one end portion of said conductive pipe and a
20 refrigerant liquid outlet continuous with the other end portion of said conductive pipe.

3. A semiconductor device comprising:

an insulative pipe including an inner surface forming an inner space shaping a
path of a refrigerant liquid and an outer surface including a plane partially formed thereof;

25 an external connecting terminal including an inner lead part including a pad part

bonded onto said plane in said outer surface of said insulative pipe and an outer lead part continuous with said inner lead part;

a power semiconductor element fixed onto said pad part of said external connecting terminal through a bonding layer; and

5 a mold resin covering the whole surface of said power semiconductor element, the whole of said inner lead part of said external connecting terminal, and said outer surface of said insulative pipe.

4. The semiconductor device according to claim 3, wherein
10 said insulative pipe comprises a vertical section of a rectangular shape.